

ISTE NETS for Students (2007)
Grade Band PK-2 Summary Rubric -- DRAFT

1. Creativity and Innovation	
Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:	
Proficient by End of Grade 2	
1.a. apply existing knowledge to generate new ideas, products, or processes	describe what they already know and need to know about a challenge/problem selected by the teacher to elicit creative thinking (e.g., cyberbullying, waste/pollution, endangered/overpopulated species, resolving an issue in the school environment). Brainstorm ideas that might contribute to a new solution to the problem or issue, use technology to gather and organize ideas and information (e.g., a concept map). Propose one or more new possible solutions.
1.b. create original works as a means of personal or group expression	create an original presentation based on an age-appropriate story, activity, or event including text and visual formats using digital tools and resources.
1.c. use models and simulations to explore complex systems and issues	use digital tools and resources to find and organize data. With the help of the teacher, create a visual model or use a simulation (e.g., graph or concept map of the life cycle of plants and animals, weather cycles, school- days activities, or how community workers contribute to the community).
1.d. identify trends and forecast possibilities	use graphic organizers and simulations to identify key variables. Identify patterns. Predict outcomes in everyday events and relationships.
2. Communication and Collaboration	
Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:	
Proficient by End of Grade 2	
2a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media	collaborate in pairs using age-appropriate digital media to learn about, develop, and share information and works with students, teachers, parents, and family members (e.g., collaborate with a partner to illustrate and present a nursery rhyme or story using concept mapping, collaborative graphic organizer, or story-building software).
2.b. communicate information and ideas effectively to multiple audiences using a variety of media and formats	share curriculum-related concepts with their classmates, families, and others using developmentally appropriate online curriculum-based resources (e.g., online songs, stories, games, puzzles, clip art, presentations, templates and webpages).
2.c. develop cultural understanding and global awareness by engaging with learners of other cultures	use technology tools to exchange—classroom to classroom—stories, artifacts, and information about their lives, communities, and cultures.
2.d. contribute to project teams to produce original works or solve problems	share with a partner or team steps for using age-appropriate technology tools to illustrate a song, rhyme, or story; to create a product; or to solve a problem.

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3. Research and Information Fluency	
Students apply digital tools to gather, evaluate, and use information. Students:	
Proficient by End of Grade 2	
3.a. plan strategies to guide inquiry	with the teacher's help and using age-appropriate technology, make a chart of the steps involved in planning a project (such as investigating weather patterns) including what they already know, what else they want to know, how they can find answers, and how to organize information found, and how to share it with others.
3.b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media	with the help of teacher, locate and gather information from preselected digital sources, choose relevant information and identify new questions. Use age-appropriate tools to organize and share what they learned.
3.c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks	describe the purpose of a variety of age-appropriate digital tools and select tools or resources from those available to effectively accomplish a variety of tasks.
3.d. process data and report results	collect data about a learning topic (e.g., weather, current events, personal interests) and use digital tools and resources to create ordered lists, demonstrate patterns, and display results in text and/or graphic formats.
4. Critical Thinking, Problem Solving, and Decision Making	
Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:	
Proficient by End of Grade 2	
4.a. identify and define authentic problems and significant questions for investigation	identify ways technology can help them explore and understand everyday problems (e.g., how to dress for the day's weather, important aspects of taking care of a pet, which community helper might help in a given situation). Record questions and capture answers and additional questions.
4.b. plan and manage activities to develop a solution or complete a project	identify and apply strategies with teacher support to select information and digital resources to complete an activity or solve a particular problem.
4.c. collect and analyze data to identify solutions and/or make informed decisions	collect data on an everyday problem or issue. Record results using digital resources. Identify patterns and propose a developmentally appropriate decision or solution.
4.d. use multiple processes and diverse perspectives to explore alternative solutions	compare problem-solving processes and solutions (captured using charts, concept maps, timelines) with others and discuss similarities and differences.

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5. Digital Citizenship	
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:	
Proficient by End of Grade 2	
5.a. advocate and practice safe, legal, and responsible use of information and technology	demonstrate an understanding of age-appropriate issues related to safe, healthy, and acceptable computer use and describe personal consequences of inappropriate use.
5.b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity	articulate and demonstrate ongoing cooperative and collaborative use of technology to contribute to an effective learning environment (e.g., work productively with a partner or in a small group on a technology-based activity and discuss or reflect on the benefits of working with a partner to complete the task).
5.c. demonstrate personal responsibility for lifelong learning	recognize and use technology as a way to communicate with others and access information for formal and informal learning.
5.d. exhibit leadership for digital citizenship	follow technology use, sharing, and safety rules and encourage their peers to follow accepted guidelines.
6. Technology Operations and Concepts	
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:	
Proficient by End of Grade 2	
6.a. understand and use technology systems	communicate about technology using developmentally appropriate and accurate terminology. Perform basic hardware and software operations. Demonstrate the ability to navigate in virtual environments (e.g., electronic books, simulations, digital presentation software, and websites) with assistance as needed.
6.b. select and use applications effectively and productively	select from a teacher-approved list and independently apply age-appropriate applications and resources to address content-related tasks and problems.
6.c. troubleshoot systems and applications	identify and solve common problems that occur during everyday use (e.g., raise or lower volume, navigate to desired page, brighten the screen image, restart computer or monitor, undo/redo).
6.d. transfer current knowledge to learning of new technologies	recognize common terminology, icons, and symbols related to basic functions of technology and apply that knowledge to new technologies.

ISTE NETS for Students (2007)
Grade Band 3-5 Summary Rubric -- DRAFT

1. Creativity and Innovation	
Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:	
Proficient by End of Grade 5	
1.a. apply existing knowledge to generate new ideas, products, or processes	identify local or global problems that need creative solutions. In small groups, engage in divergent thinking to explore options for solutions. Use technology (e.g., graphs, wikis, other group authoring tools) to capture and share promising strategies with the whole group. Select and describe specific ideas or create products or processes that could provide new solutions.
1.b. create original works as a means of personal or group expression	use technology resources to modify or create digital works; produce a media-rich digital story, individually or collaboratively; document a reflection of the processes and results (e.g., story based on a first-person interview or historical research).
1.c. use models and simulations to explore complex systems and issues	apply models and simulations to explore cause and effect relationships based on changes in elements, patterns, or sequence; explain or illustrate results.
1.d. identify trends and forecast possibilities	collect and electronically store data based on observations of changes in one or more variables. Use graphs to identify trends. Make a data-driven prediction about future outcomes.
2. Communication and Collaboration	
Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:	
Proficient by End of Grade 5	
2a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media	collaborate in pairs or groups to develop technology-based presentations or products for content-related topics using digital audio, photos, images, video, or charts (e.g., interact via e-mail, videoconferencing, or blogging with young adult authors/musicians/artists/scientists to collaborate on a multimedia product).
2.b. communicate information and ideas effectively to multiple audiences using a variety of media and formats	create and edit products in a variety of media environments (e.g., presentation, newsletter, video, annotated calendar, wiki) to effectively communicate individual and group curriculum activities, ideas, or results to multiple audiences.
2.c. develop cultural understanding and global awareness by engaging with learners of other cultures	use technology communications tools to interact with students or experts from other cultures, communities, or countries on a collaborative, content-specific activity or project.
2.d. contribute to project teams to produce original works or solve problems	using appropriate digital tools, work in pairs or small groups with assigned roles to explore, illustrate, and present specific subject-related concepts or content.

ISTE NETS for Students (2007)
Grade Band 3-5 Summary Rubric -- DRAFT

3. Research and Information Fluency	
Students apply digital tools to gather, evaluate, and use information. Students:	
Proficient by End of Grade 5	
3.a. plan strategies to guide inquiry	individually, in pairs, or in small groups, develop and refine questions for investigating a learning-related topic. List possible sources of the information needed and appropriate information gathering tools. Outline the steps in the investigation using digital planning tools.
3.b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media	use digital tools to locate and organize relevant and reliable information from a variety of digital sources. Analyze and synthesize results to answer a question or clarify an issue. Document sources appropriately.
3.c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks	compare and contrast the effectiveness of two or more digital tool and information resources used to accomplish an assigned task.
3.d. process data and report results	develop a strategy for gathering and analyzing data. Use digital tools (e.g., spreadsheets, graphs, visualization, individual response systems) to process data and display meaningful patterns. Present a report using appropriate visual formats.
4. Critical Thinking, Problem Solving, and Decision Making	
Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:	
Proficient by End of Grade 5	
4.a. identify and define authentic problems and significant questions for investigation	use print and online resources to identify significant issues for their school, community, or beyond (e.g., making their school more energy efficient, cyberbullying, reducing school trash and litter). Record the results of their investigations along with relevant questions for each. Analyze results to clarify and focus the issue or problem.
4.b. plan and manage activities to develop a solution or complete a project	conceptualize, guide, and manage individual or group activities using digital planning tools for completing a project or solving a problem.
4.c. collect and analyze data to identify solutions and/or make informed decisions	select and apply digital tools to collect, organize, and analyze data for evaluating theories and testing hypotheses. Document possible bias reflected in sources used.
4.d. use multiple processes and diverse perspectives to explore alternative solutions	apply digital tools and resources to explore a topic from the perspective of multiple stakeholders and propose more than one possible solution.

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Grade Band 3-5 Summary Rubric -- DRAFT

5. Digital Citizenship	
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:	
Proficient by End of Grade 5	
5.a. advocate and practice safe, legal, and responsible use of information and technology	research, discuss, and apply safe, responsible, and legal use of technology (e.g., privacy, security, copyright, file-sharing, accessibility, plagiarism). Use technology resources to convey the relevance of these issues to other students and the public at large.
5.b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity	select and apply technology resources and describe how these tools improve their ability to communicate, collaborate, be productive, and achieve goals.
5.c. demonstrate personal responsibility for lifelong learning	describe how they select and use technology resources to pursue their personal and academic learning projects outside of the classroom.
5.d. exhibit leadership for digital citizenship	Identify and discuss the effects of existing and emerging technology on individuals, society, and the global community.
6. Technology Operations and Concepts	
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:	
Proficient by End of Grade 5	
6.a. understand and use technology systems	demonstrate an understanding of the basic features of computer and network interfaces and use them efficiently without assistance. Explore and apply a variety of technology systems and resources (e.g., calculators, digital cameras, probes, e-books, individual response systems, white boards) to complete learning tasks. Apply basic technology-based thinking strategies (e.g., automated search methods, storage and retrieval techniques, algorithmic thinking) to a variety of problems.
6.b. select and use applications effectively and productively	apply criteria for selecting an appropriate technology application for use with a learning activity. Use the application proficiently to complete the task. Discuss its efficiency and effectiveness.
6.c. troubleshoot systems and applications	determine the source of common operational and network problems (e.g., loss of connectivity, frozen screen, printing problems, reloading) and propose changes in hardware, software or network settings to solve them.
6.d. transfer current knowledge to learning of new technologies	apply basic concepts and functions (e.g., multiple windows, editing functions, navigational tools, help assistance) from previous learning to new technologies and situations.

ISTE NETS for Students (2007)
Grade Band 6-8 Summary Rubric -- DRAFT

1. Creativity and Innovation

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

Proficient by End of Grade 8

1.a. apply existing knowledge to generate new ideas, products, or processes	identify a real-world problem that would benefit from an improved solution. Generate multiple possible ways of solving the problem. Consider the parameters that must be met to achieve a workable solution. Select the best solution from among the possible alternatives. Describe or create the new products (e.g., movies, public service announcements, websites) or processes that could be used to provide innovative solutions in the real world.
1.b. create original works as a means of personal or group expression	create original animations or videos about a topic of personal interest or in response to a learning activity and document a reflection on the quality of the production (e.g., work illustrating reactions to communicating with students in other cultures about some global issue).
1.c. use models and simulations to explore complex systems and issues	describe and illustrate a complex content-related concept or process using a model, simulation, or concept-mapping software.
1.d. identify trends and forecast possibilities	design and implement a strategy for gathering and manipulating data needed to make a data-driven prediction or to forecast possibilities.

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

Proficient by End of Grade 8

2a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media	use digital media tools (e.g., blogs, wikis, video-conferencing, etc.) for synchronous and asynchronous collaboration with peers/experts/global partners to plan, design, and publish a content-specific product. Present and/or post results online.
2.b. communicate information and ideas effectively to multiple audiences using a variety of media and formats	individually or in collaborative groups, identify and evaluate information from a variety of online sources for accuracy, bias, and comprehensiveness. Summarize and distribute results to multiple audiences using a variety of communications media and formats (e.g., presentation, webpage, wiki, blog, online collaborative writing tools).
2.c. develop cultural understanding and global awareness by engaging with learners of other cultures	identify a topic of global concern and use a variety of digital tools to collaborate with learners from another cultures to better understand the topic from different perspectives. Identify potential solutions or create products that help others understand the issues and perspectives.
2.d. contribute to project teams to produce original works or solve problems	identify an appropriate project or problem associated with a specific content area; identify and assign roles for project team members; select appropriate digital tools for supporting investigation and/or experimentation related to the project/problem; work collaboratively to arrive at identifying and testing possible solution(s); present and disseminate results to a broad audience.

ISTE NETS for Students (2007)
Grade Band 6-8 Summary Rubric -- DRAFT

3. Research and Information Fluency	
Students apply digital tools to gather, evaluate, and use information. Students:	
Proficient by End of Grade 8	
3.a. plan strategies to guide inquiry	create a concept map describing the aspects of a research topic. Select key topics for exploration. Determine data- collection and search needs and strategies Use project-management software to lay out inquiry processes and procedures.
3.b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media	independently develop and apply effective search strategies (including Boolean logic) for locating credible resources in multiple digital databases, categorize and classify information to support analysis, synthesize results, and report conclusions.
3.c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks	select and apply appropriate tools and digital resources to accomplish a variety of tasks and justify their use based on efficiency and effectiveness for completing the projects.
3.d. process data and report results	employ data-analysis tools (e.g., databases, visualization tools, statistical programs, graphing calculators) to analyze data collections. Create projections and models to inform decision-making. Effectively use multimedia formats to report results.
4. Critical Thinking, Problem Solving, and Decision Making	
Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:	
Proficient by End of Grade 8	
4.a. identify and define authentic problems and significant questions for investigation	explore a content-related issue or problem (e.g., historical or present-day issues or problems informed by authentic resources from government, media, and other expert advisors). Apply research strategies to obtain information and data related to the identified problem. Use statistical and/or graphed data to organize and present the problem and possible solutions in digital format.
4.b. plan and manage activities to develop a solution or complete a project	plan a thesis statement related to a problem and independently select and use the appropriate digital tools, resources, and computational strategies to solve the problem.
4.c. collect and analyze data to identify solutions and/or make informed decisions	select and use data-collection technology (e.g., probes, handhelds, geographic mapping systems) to gather and view data, examine patterns, analyze potential solutions, and report conclusions for content-related problems.
4.d. use multiple processes and diverse perspectives to explore alternative solutions	use electronic data collection and collaborative authoring tools to explore and document points of view based on location, environment, or culture and to evaluate solutions from a variety of perspectives.

ISTE NETS for Students (2007)
Grade Band 6-8 Summary Rubric -- DRAFT

5. Digital Citizenship	
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:	
Proficient by End of Grade 8	
5.a. advocate and practice safe, legal, and responsible use of information and technology	analyze the consequences resulting from lack of access to technology resources on various populations, including underprivileged and those with physical disabilities. Advocate acquisition of technology resources for all learners.
5.b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity	evaluate benefits, limitations, and optimal conditions for use of new technology resources to support communication, collaboration, product development, and academic goals.
5.c. demonstrate personal responsibility for lifelong learning	identify and use personal and academic learning communities or resources to support lifelong interests, learning, and academic success.
5.d. exhibit leadership for digital citizenship	use collaborative electronic communications, video, and/or authoring tools to explore, share, and publish aspects of digital citizenship with other learners around the world.
6. Technology Operations and Concepts	
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:	
Proficient by End of Grade 8	
6.a. understand and use technology systems	use a variety of technology interfaces and operating systems (e.g., computer, printer, Internet-connected mobile devices) and demonstrate an understanding of how they interact with local and wide area networks. Apply technology systems and resources (e.g., graphing calculator, electronic microscope, simulations, digital recorders and editors, generic productivity tools) to complete learning activities. Use multiple file types and their related software applications. Apply basic algorithmic concepts and methods (e.g., problem decomposition, data representation and abstraction, iteration, ordering of steps) to solve problems.
6.b. select and use applications effectively and productively	independently develop and apply criteria for selecting a digital application to accomplish a specific real-world task. Compare and contrast the efficiency and effectiveness of several applications. Justify the appropriateness of an application.
6.c. troubleshoot systems and applications	demonstrate the ability to locate and use documentation and online resources to help solve hardware and software problems. Provide accurate descriptions of the problems (e.g., keep a log of solutions tried for hardware, software, and network issues in either the classroom or school) and, when appropriate, propose a plan of action to resolve unexpected problems and prevent future occurrences.
6.d. transfer current knowledge to learning of new technologies	develop and apply strategies for systematically learning new technologies and advanced features of current technologies.

ISTE NETS for Students (2007)
Grade Band 9-12 Summary Rubric -- DRAFT

1. Creativity and Innovation	
Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:	
Proficient by End of Grade 12	
1.a. apply existing knowledge to generate new ideas, products, or processes	independently or in groups, research a complex real-world topic using online resources (e.g., websites, databases, e-mail, and online forums). Summarize the state of knowledge about a challenge related to that topic. Analyze existing knowledge and develop and capture new ideas (e.g., using search tools to analyze text, spreadsheets to tabulate and chart numerical data, or graphic organizers to create concept maps). Extend knowledge by developing new products or processes.
1.b. create original works as a means of personal or group expression	design, develop, and test a website that meets accessibility requirements and incorporates original individual or group works with commentary demonstrating knowledge and analysis of the elements and techniques of the medium.
1.c. use models and simulations to explore complex systems and issues	describe and illustrate a complex, real-world problem or process using model or simulation.
1.d. identify trends and forecast possibilities	use simulations, databases, graphic organizers, and mathematical models to depict and predict the behavior of complex systems (e.g., using GIS modeling to predict future growth patterns in a community, using tables of values to identify and apply numerical patterns, using concept maps to identify likely future interrelationships).
2. Communication and Collaboration	
Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:	
Proficient by End of Grade 12	
2a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media	collaborate with peers and field-specific experts to research a critical issue applying effective research strategies, appropriate digital tools for the task(s), field-testing component(s); and publication of results to interested individuals and through appropriate networks.
2.b. communicate information and ideas effectively to multiple audiences using a variety of media and formats	collaborate with local and global partners and content experts to develop multimedia presentations incorporating a variety of media elements (i.e., clip art, movie, animation, graphs, concept maps, etc.) to clearly illustrate, explain, explore, and demonstrate an assigned concept, principle, or procedure appropriate for specific audiences.
2.c. develop cultural understanding and global awareness by engaging with learners of other cultures	engage in collaborative research with students and experts from other countries to develop cultural understanding by exploring sophisticated global issues. Create a product that increases global understanding for others.
2.d. contribute to project teams to produce original works or solve problems	collaborate to research, select, and apply advanced technology resources (e.g., expert systems, intelligent agents, real-world models and simulations) to investigate a real-world problem or issue. Share findings through real-time and/or recorded demonstrations to classmates and a broader audience online.

ISTE NETS for Students (2007)
Grade Band 9-12 Summary Rubric -- DRAFT

3. Research and Information Fluency	
Students apply digital tools to gather, evaluate, and use information. Students:	
Proficient by End of Grade 12	
3.a. plan strategies to guide inquiry	define a research thesis or issue for investigation. Describe diverse strategies for gathering information, analyzing data, reaching a conclusion or making recommendation(s). Reflect on results from above step. Justify your selection of strategies for guiding inquiry.
3.b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media	apply efficient and effective search strategies for locating digital resources for use in a collaborative real-world research project. Organize and synthesize data to support conclusions. Document sources using techniques appropriate for digital publication.
3.c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks	investigate and select current and emerging digital tools or resources to use in a real-world task. Determine criteria for measuring appropriateness for the task. Justify selection based on an analysis of costs and benefits.
3.d. process data and report results	analyze complex data sets (e.g., weather data, population statistics, other content-related data) using advanced database query tools to develop hypotheses, test theories, or propose solutions to real-world problems. Use appropriate formats to effectively communicate results to specific audience(s).
4. Critical Thinking, Problem Solving, and Decision Making	
Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:	
Proficient by End of Grade 12	
4.a. identify and define authentic problems and significant questions for investigation	apply technology-based problem-solving strategies (e.g., digital search strategies, visual representations, simulations) to identify, research, and model effects of complex global issues. Present ideas for innovative sustainable solutions.
4.b. plan and manage activities to develop a solution or complete a project	demonstrate proficiency in planning and managing resources and processes, identifying solutions, and selecting appropriate tools and computational strategies for the task or problem. Configure and troubleshoot necessary hardware, software, and network systems to optimize their use.
4.c. collect and analyze data to identify solutions and/or make informed decisions	apply technology-based problem-solving strategies (e.g., simulations, visual representations, modularity). Select appropriate tools to solve a problem and report/disseminate results.
4.d. use multiple processes and diverse perspectives to explore alternative solutions	apply targeted research, sampling techniques, simulations, and critical-thinking skills to determine how varying circumstances, resources, beliefs, and other factors related to specific locations or communities may affect decisions and/or solutions/practices.

ISTE NETS for Students (2007)
Grade Band 9-12 Summary Rubric -- DRAFT

5. Digital Citizenship	
Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:	
Proficient by End of Grade 12	
5.a. advocate and practice safe, legal, and responsible use of information and technology	analyze and evaluate consequences and costs of unethical use of information and computer technology (e.g., hacking, spamming, consumer fraud, virus setting, privacy intrusion). Identify methods for addressing these risks. Put processes and systems into place to protect information and technology systems.
5.b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity	lead, organize, and facilitate use of collaboration and communications tools among group members to achieve team goals.
5.c. demonstrate personal responsibility for lifelong learning	select and apply technology resources to support personal growth, lifelong learning, and career needs.
5.d. exhibit leadership for digital citizenship	explore the social, ethical, and legal issues related to the use of technology resources locally and globally. Propose and advocate a course of action to anticipate and resolve problems.
6. Technology Operations and Concepts	
Students demonstrate a sound understanding of technology concepts, systems, and operations. Students:	
Proficient by End of Grade 12	
6.a. understand and use technology systems	routinely apply a variety of technology systems related to specific subject-matter learning (e.g., electronic microscopes, probes, and multifunction calculators, robotics, MIDI, e-books; geographical information systems, electronic databases). Actively interface with technology at both the hardware and software levels (e.g., programming, robotics). Use fundamental algorithmic thinking strategies (e.g., conditional branching, modularization, recursion).
6.b. select and use applications effectively and productively	adapt and use advanced skills to make efficient and effective use of current technology resources. Evaluate the potential of emerging technology resources for addressing personal, social, lifelong learning, and career needs.
6.c. troubleshoot systems and applications	support and assist others in identifying, assessing, and solving a variety of hardware or software problems. Contribute to the creation of documentation to support other learners.
6.d. transfer current knowledge to learning of new technologies	support and assist others in learning new technologies and advanced features of current technologies.